Marine, Nearshore and Estuarine Conservation Targets for the Puget Trough/Georgia Basin Ecoregion: Integrating the Marine Component of an Ecoregional Plan into a Geographic Information System (GIS)

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The marine, nearshore and estuarine environments of the Puget Trough/Georgia Basin - chiefly the Strait of Georgia, the Strait of Juan de Fuca, and Puget Sound - present an essential component of The Nature Conservancy's ecoregional planning process. Ecoregional planning entails identifying a set of sites that collectively capture viable examples of all native species and communities from among a larger set of planning units within the ecoregion. This collection of planning units, termed the "conservation portfolio," provides a systematic basis for site planning and acquisition.

The Nature Conservancy is currently working on the Willamette Valley/Puget Trough/Georgia Basin ecoregion to identify a portfolio of marine and terrestrial areas using an algorithm called SITES. For the marine component, this algorithm is incorporated into a GIS using information from various subtidal, nearshore and shoreline spatial data sets. Data gathering efforts by the State of Washington and the British Columbia Provincial government, as well as other partners, provide critical marine habitat information that help construct a framework for prioritizing sites at multiple scales across varying landscapes.

Our goal is to identify areas of significant biodiversity, highlighting elements such as communities and species that are rare, declining, or endemic within the larger ecosystem. SITES is an excellent analytical tool for designing conservation portfolios within a GIS, and presents a great opportunity to represent and protect the unique features of this region.

Can Eelgrass Transplanting Work? Two Small Victories for the Grass

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The reported history of success of eelgrass transplanting in the Puget Sound area has been checkered at best. Two examples of successful eelgrass transplantings are reported. In a small-scale prototype transplant on an exposed sandy beach, estimated number of shoots had multiplied by 100 times over 2 years and the eelgrass patch was indistinguishable from a nearby reference patch. In another experiment in Port Angeles, a cap of inorganic sand was placed over a 1,500-ft^2 area with thick wood debris from years of log raft storage. The cap was planted with 429 planting units (PU - 3 eelgrass shoots and associated rhizomes). About 40 percent of initial PU remained after two years and new shoots had radiated an average of 7 to 12 inches around the surviving PU. In 2000, no significant differences in blade length, rhizome spreading, or shoot density were seen between fertilized and unfertilized areas in the bed. However, PUs with longer blade lengths (12 inches) at the time of planting had significantly longer blade lengths than those PUs clipped shorter (to 7 inches). Sediment organic carbon increased from 0 at the time of capping to about 0.2 percent in 1999 and 2000.

Value of Integrated Management Approach to Sustainability as Demonstrated in Carkeek Park and the Pipers Creek Watershed

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Agencies and community people in urban Seattle have partnered in the development of an integrated demonstration model at Carkeek Park and the Pipers Creek (Carkeek) Watershed for over twenty years to achieve clean water and a sustained salmon run. They have achieved many successes in the restoration of habitat in the park and the community culminating in the restoration of the salmon run in the creek system. This partnership has now launched into the first step in improving the educational component by remodeling the Annex of their Environmental Education Center to have a demonstration "green" building on the Carkeek Park Education Campus. Learn how the "New Urban Creek" restoration, the Salmon Friendly Garden and backyard Habitat Gardens, and how the remodeled "green" building can enhance and benefit the earth's sustainability.

The Piper's Creek Erosion and Sedimentation Control Project is part of an integrated approach to mitigating the negative effects associated with urban creeks. It installed in-stream features to enhance the variety of habitat and addressed serious street runoff erosion on the steep hillsides.

The goal of the remodeled Annex is to achieve Platinum rating in the LEED Green Building Rating System. As they pertain to salmon habitat, the methods of construction, choice of materials, energy conservation, and management of waste and storm water will be the primary sustainable features of the building.

A Nearshore Substrate Enhancement Project in Elliott Bay, Washington

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A nearshore subtidal enhancement project was initiated in March 1998 near Duwamish Head in Elliott Bay, Washington to increase habitat diversity for marine organisms by introducing approximately 60 cubic yards of material. The project was undertaken jointly by the Elliott Bay/Duwamish Restoration Panel, comprising

federal, tribal, state, and local agencies, to address natural resource damages in Elliott Bay, and the U.S. Army Corps of Engineers.

Substrate material, placed at –4 to –12 ft. and at –35 ft. MLLW, consisted of pea gravel and oyster shell (one plot each), quarry spall and cobble (3 plots each). The specific materials were placed in the 8 plots at 2 sites with a maximum height of 18 inches. The five year monitoring program to assess macroalgae and invertebrate colonization includes physical observation, biological sampling and video documentation.

Monitoring through August 2000 demonstrates that the cobble and spall substrates are effective for increasing macroalgae and providing cover for fish and invertebrates. Epibenthic invertebrate surveys conducted at the pea gravel plot show an increase in juvenile salmonid prey. The oyster shell shows red rock crab and shore crab recruitment.